VPDES PERMIT FACT SHEET ADDENDUM – MAJOR MODIFICATION

This addendum supplements the fact sheet which accompanied the existing February 1, 2013 permit and gives pertinent information concerning the DEQ-initiated major modification of the VPDES permit listed below. This permit is being processed as a major, municipal permit. The modification is solely intended for the insertion of nutrient concentration limits based on the installed technology approved in the CTO issued June 15, 2015. The effluent limitations contained in this permit will maintain the Water Quality Standards of 9VAC25-260 et seq. This fact sheet addendum will only address the sections of the 2013 fact sheet that require updating commensurate with this modification. The following numbering schema is consistent with the current Fact Sheet.

1. Facility Name: Totopotomoy Wastewater Treatment Plant

   Facility Location: 9015 Pole Green Park Lane
   Mechanicsville, Virginia

   Facility Mailing Address: P.O. Box 470
   Hanover, VA 23069

2. Permit No. VA0089915 Expiration Date: January 31, 2018

3. SIC Code: 4952 – Sewerage System

4. Owner: County of Hanover
   Owner Contact: David F. Van Gelder
   Title: Chief of Operations and Maintenance
   Hanover County Public Utilities
   Telephone: (804) 365-6235
   Email: dfvangelder@hanovercounty.gov

5. Permit Modification Drafted By: Laura Galli Date: September 22, 2015

   DEQ Regional Office: Piedmont Regional Office
   Reviewed By: Brian Wrenn Date: September 29, 2015
   Emilee Adamson Date: October 19, 2015

6. Receiving Stream:

Name:	Pamunkey River
River Mile:	8-PMK054.89
Basin:	York River
Subbasin:	N/A
Section:	1
Class:	II
Special Standards:	aa

1-Day, 30 Year low flow: 24 MGD
1-Day, 10-Year low flow: 32 MGD
7-Day, 10-Year low flow: 36 MGD
30-Day, 10-Year low flow: 42 MGD
30-Day, 5-Year low flow: 54 MGD

Harmonic Mean: 199 MGD

10. Description of Wastewater Treatment System:

Table 1

Outfall Number	Discharge Source	Treatment	Design Flow
001	Residential, commercial and industrial connections	Influent screening, activated sludge (BNR mode), secondary clarification, tertiary deep bed monomedia sand filtration and backwash waste filtrate equalization tank, UV disinfection, and post aeration. Sludge is dewatered, digested, and disposed at landfill.	7 MGD

See Process Schematic in **Attachment A**.

The facility has installed two (2) tertiary deep bed monomedia sand filters and a 265,000 gallon Backwash Waste Filtrate Equalization Tank. The filters aid in phosphorous reduction (to a level of 1.2 mg/l) in the effluent, thus decreasing the quantity of alum needed to be added upstream of the secondary clarifiers. In the future, these filters will also aid in denitrification (with external carbon source addition) for total nitrogen reduction. The Equalization Tank facilitates back-to–back backwashes of the filters as well as equalizing filtrate from gravity belt thickeners and belt filter presses. The equalizing of these flows evens out the loading to the nutrient removal system, which improves overall plant performance.

16. Basis for Limitations – 7 MGD:

Limitation Rationale for Total Phosphorus and Total Nitrogen
On October 1, 2008, DEQ issued a Certificate to Construct (CTC) to the facility for a 7 MGD expansion and approved Total Nitrogen (TN) and Total Phosphorus (TP) annual average limitations of 8.0 mg/L and 2.0 mg/L, respectively (see Attachment B). These concentrations were included in the tiered effluent limitations in the 2013 permit. The TN concentration limit complied with the total nitrogen wasteload allocations, 182,734 pounds per year, in the Chesapeake Bay TMDL, but the TP concentration of 2 mg/L exceeded the total phosphorus wasteload allocation of 12,182 pounds per year. Although the TP concentration of 2.0 at design flow did not represent compliance with the allocation, compliance with the allocation is required by the General VPDES Watershed Permit VAN030051. The Office of VPDES Permits concurred with this approach in an email dated May 10, 2012. A Certificate to Operate (CTO) for this expansion was approved on October 18, 2010

On August 26, 2011, DEQ issued a CTC to the facility for a 10 MGD expansion and approved TN and TP annual average limitations of 6.0 mg/L and 0.4 mg/L, respectively, with the new TP limitation being in compliance with the nutrient wasteload allocation of 12,182 pounds per year. To date, a CTO has not been issued for the expansion, and therefore the facility is still operating at 7 MGD design capacity. The effluent limitations relative to the 7 MGD flow are included in Part I.A.1 of the 2013 Permit, and are to be effective until the issuance of the CTO for the expansion to 10 MGD flow (Part I.A.2 of the 2013 Permit).

On June 13, 2013, the permittee submitted a Certificate to Construct (CTC) application to install two tertiary deep bed monomedia sand filters and a 265,000 gallon Backwash Waste Filtrate Equalization Tank (See **Attachment B**). The TP design performance standard for this technology is an annual average of 1.2 mg/L. According to VAC25-40-70, technology-based effluent concentration limitations shall be included in the individual permit for any facility that has installed technology for the control of phosphorus whether by new construction, expansion, or upgrade. In addition, the limit should be inserted in the permit upon issuance of the CTC and become effective the January following issuance of the CTO for nutrient removal technology. Because the CTO

(See **Attachment B)** was issued June 15, 2015; the technology-based concentration limitation for total phosphorus will become effective January 1, 2016.

In conjunction with Part I.A.1, which will be effective until December 31, 2015, and Part I.A.2 (becoming Part I.A.3 with this permit modification) which will become effective upon issuance of the CTO for the 10 MGD design capacity, a third tier of limitations is included in the Permit as Part I.A.2 effective January 1, 2016, as follows:

Part I.A.2 – 7 MGD

PARAMETER	BASIS	DISCHARGE LIMITS				MONITORING REQUIREMENTS	
		Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
001 Flow	NA	NL – monitoring only	NA	NA	NL	Continuous	TIRE
002 pH	1, 5	NA	NA	6.0 S.U.	9.0 S.U	1 per Day	Grab
004 TSS	2	10[(a)] mg/L 260[(a)] kg/day	15 mg/L 400[(a)] Kg/day	NA	NA	1 per Month	24 HC
007 DO	2	NA	NA	6.5 mg/L	NA	1 per Day	Grab
068 TKN	2	3.0 mg/L 79 Kg/day	4.5 mg/L 120[(a)] Kg/day	NA	NA	1 per Day	24 HC
159 $cBOD_5$	2	10[(a)] mg/L 260[(a)] Kg/day	15 mg/L 400[(a)] Kg/day	NA	NA	1 per Day	24 HC
846 *E. coli*[(b)]	1, 3	126 N/100 mL	NA	NA	NA	1 per Day between 10 am and 4 pm	Grab
792 Total Nitrogen – Calendar Year Average	4	8.0 mg/L	NA	NA	NA	1 per Year	Calculated
794 Total Phosphorus – Calendar Year Average	4	1.2 mg/L	NA	NA	NA	1 per Year	Calculated
805 Total Nitrogen – Calendar Year-to-Date	4	NL	NA	NA	NA	1 per Month	Calculated
806 Total Phosphorus – Calendar Year-to-Date	4	NL	NA	NA	NA	1 per Month	Calculated

1. Water Quality-based Limits.
2. Permit Writer Judgment – Agency guidance regarding effluent development for receiving streams that cannot be modeled. Also see the June 2, 1997 memorandum in Attachment 6 Regarding the D.O. limitation, the limitation is further based on action taken by the State Water Control Board – see comment below.
3. TMDL – also see item 26 of this fact sheet.
4. Regulation for Nutrient Enriched Waters and Discharges within the Chesapeake Bay Watershed (9 VAC 25-40-70).
5. Federal Secondary Treatment Standards (40 CFR 133.102).

(a) This limitation is expressed in two significant figures.

(b) Geometric mean. This *E. coli* limitation became effective during the term of the 2007 permit in accordance with successful completion of a bacterial monitoring program required by the 2007 permit (Part I.B in the 2007 permit).

21. Changes made during 2015 major modification.

Table 2: Permit Processing Change Sheet

Permit Reference	**Description of Change**	**Rationale**
Part I.A.1 narrative	Modified to reflect that the limitations included in Part I.A.1 will be effective until December 31, 2015.	As of January 1, 2016 the limitations included in table I.A.2 will be effective in accordance with GM07-2008.

Permit Reference	Description of Change	Rationale
Part I.A.1, Total Phosphorus limitation	Deleted weekly limitation of 2.0 mg/L.	Limitation effective until December 31, 2013.
Footnote 3	Deleted.	No longer applicable following deletion of the Total Phosphorus limitation.
Footnotes 4, 5 and 6	Changed to footnotes 3, 4 and 5.	Footnotes renumbered following deletion of the Total Phosphorus limitation.
Part I.A.2	Inserted permit limitations that will be effective January 1, 2016.	These permit limitations are the same as the ones in Part I.A.1, with the exception of the Total Phosphorus, Calendar Year Average. In accordance with the CTC and CTO issued June 13, 2013 and June 15, 2015, respectively, and with GM07-2008 Amendment 2 and 9VAC25-40-70 the TP Calendar Year Average will be 1.2 mg/L.
Part I.A.3	This Part is being renamed from I.A.2 to I.A.3.	Renamed as Part I.A.3 following insertion of the new limitations effective January 1, 2016 until the issuance of the CTO for the 10 MGD capacity expansion.
Part II	Updated in accordance with GM14-2003.	

24. Public Notice Information required by 9 VAC 25-31-280 B:

Comment period: Start Date: XXXX, 2015 End Date: XXXX, 2015

Published Dates: XXXX, 2015 and XXXX, 2015
Name of Newspaper: *Herald Progress*

All pertinent information is on file and may be inspected or copied by contacting Laura Galli at:

Virginia Department of Environmental Quality (DEQ)
Piedmont Regional Office
4949-A Cox Road
Glen Allen, Virginia 23060-6296

Phone: (804) 527-5095
Email: laura.galli@deq.virginia.gov

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer and of all persons represented by the commenter/requester, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the permit. Requests for public hearings shall state 1) the reason why a hearing is requested; 2) a brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit; and 3) specific references, where possible, to terms and conditions of the permit with suggested revisions. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given. The public may review the draft permit and application at the DEQ Piedmont Regional Office by appointment.

25. Additional Comments:

a. Previous Board Action:

As of the drafting of this 2015 permit modification, the permittee was not issued any Warning Letters or Notices of Violations.

b. Staff Comments:

- The discharge is in conformance with the existing planning documents for the area.
- The permittee does not participate in the Virginia Environmental Excellence Program (VEEP).
- Local government officials were notified of the public comment period on XXXX, 2015. In accordance with the Code of Virginia, §62.1-44.15:01, the following individuals received the notification: the Hanover County Chairman of the Board of Supervisors, the Hanover County Administrator, and the Richmond Regional Planning District Commission.
- The permit maintenance fee was deposited on September 21 2015.
- The facility is currently enrolled in the eDMR program. Date of enrollment: 02/05/2013.

c. Public Comments: TBD

d. Owner Comments: TBD

26. Total Maximum Daily Load (TMDL): During the 2012 305(b)/303(d) Integrated Water Quality Assessment Report, the Pamunkey River was assessed as a Category 5D water ("The Water Quality Standard is not attained where TMDLs for a pollutant(s) have been developed but one or more pollutants are still causing impairment requiring additional TMDL development."). The Recreation Use is impaired due to E. coli exceedances, the Aquatic Life Use is impaired due to EPA's overlisting of the river for nutrients in 1998, and the Fish Consumption Use is impaired due to VDH advisories for PCBs and mercury. The Wildlife Use was fully supporting. The Totopotomoy WWTP was addressed in the Pamunkey River and Tributaries Bacterial TMDL, which was approved by the SWCB on 12/11/2014 and by the EPA on 4/27/2015. The facility was included in the Lower Pamunkey River watershed TMDL equation and received an E. coli wasteload allocation of 1.74E+13 cfu/year. This TMDL equation supersedes the Pamunkey River Basin Bacterial TMDL, which was originally approved by EPA on 8/2/2006 and subsequently modified on several occasions (see 2012 Fact Sheets in **Attachment C**).

This facility discharges directly to the Pamunkey River in the Chesapeake Bay watershed in the Upper Pamunkey River segment (segment number PMKTF). The receiving stream has been addressed in the Chesapeake Bay TMDL, approved by EPA on December 29, 2010. The TMDL addresses dissolved oxygen (DO), chlorophyll a, and submerged aquatic vegetation (SAV) impairments in the main stem Chesapeake Bay and its tidal tributaries by establishing non-point source load allocations (LAs) and point-source waste load allocations (WLAs) for Total Nitrogen (TN), Total Phosphorus (TP) and Total Suspended Solids (TSS) to meet applicable Virginia Water Quality Standards contained in 9VAC25-260-185. This facility is considered a Significant Chesapeake Bay wastewater discharge and has been assigned a TN WLA of 182,734 pounds per year, a TP WLA of 12,182 pounds per year, and a TSS WLA of 913,668 pounds per year.

Implementation of the Chesapeake Bay TDML is currently accomplished in accordance with the Commonwealth of Virginia's Phase I Watershed Implementation Plan (WIP), approved by EPA on December 29, 2010. The approved WIP recognizes that the TMDL nutrient WLAs for Significant

Chesapeake Bay wastewater dischargers are set in two regulations: 1) the Water Quality Management Planning Regulation (9VAC25-720); and 2) the "General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed of Virginia" (9VAC25-820). The WIP further outlines that since TSS discharges from wastewater facilities represent an insignificant portion of the Bay's total sediment load, they may be considered in the aggregate. The WIP also states that wastewater discharges with technology-based TSS limits are considered consistent with the TMDL. The TSS limitations in the permit are more stringent than the applicable technology based limitations (i.e., secondary standards) and therefore, the discharge is in conformance with the TMDL.

40 CFR 122.44(d)(1)(vii)(B) requires permits to be written with effluent limits necessary to meet water quality standards and to be consistent with the assumptions and requirements of applicable WLAs. DEQ has provided coverage under the VPDES Nutrient General Permit (GP) for this facility under permit VAN030051. The requirements of the Nutrient GP currently in effect for this facility are consistent with the Chesapeake Bay TMDL. This individual permit includes TSS limitations of 10 mg/L monthly average that are also consistent with the Chesapeake Bay TMDL and WIP. In addition, the individual permit has limits of 10 mg/L cBOD5 monthly average, 3.0 mg/L TKN monthly average, and 6.5 mg/L DO minimum which provide protection of instream D.O. concentrations to at least 5.0 mg/L. However, implementation of the full Chesapeake Bay WIP, including GP reductions combined with actions proposed in other source sectors, is expected to adequately address ambient conditions such that the proposed effluent limits of this individual permit are consistent with the Chesapeake Bay TMDL, and will not cause an impairment or observed violation of the standards for DO, chlorophyll a, or SAV as required by 9VAC25-260-185. The Totopotomoy discharge will not contribute to the TMDL impairments. *E. coli* is limited to levels that protect the water quality standard. Effluent monitoring indicated that dissolved mercury and PCBs were not detected at acceptable quantification levels. Total Nitrogen, Total Phosphorus and Total Suspended Solids are addressed in the discussion above.

27. Summary of attachments to this Fact Sheet Addendum:

Attachment A: Flow Diagram
Attachment B: CTC issued June 13, 2013, CTO issued June 15, 2015
Attachment C: 2012 Fact Sheets for 303(d) Waters
Attachment D: Owner Comments